

Brandon Leung

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PROFESSIONAL EXPERIENCE

Senior Machine Learning & Computer Vision Engineer @ Tesla

Feb 2024 – Present

Project lead, trained & shipped multiple 3D visual perception models to 1 million+ customer cars

- Led real-time in-car 3D reconstruction, parking spot detections, & semantic segmentation development
- Primary contributor to model architecture, training procedure, ground truth generation, & evaluation metrics
- Significantly improved long-tailed precision/recall: adverse weather, unusual objects, unusual locations
- Responsible for safety-critical collision avoidance for many Tesla features: [Autopilot/FSD](#), [Autopark](#) (10 million+ customer usages), [Hi-Fi Park Assist](#), [Actually Smart Summon](#)

Machine Learning & Computer Vision Engineer @ Tesla

Aug 2022 – Feb 2024

Core developer for Tesla's long-range 3D vision Occupancy Network

- Improved performance in adverse conditions like snow, rain, harsh sunlight by leveraging fleet data
- Developed time/location sensitive metrics to improve model insight
- Significantly improved network efficiency by ablating architectural components

Researcher @ Statistical Visual Computing Lab, UCSD

Jun 2017 – May 2022

Machine learning & computer vision under Prof. Nuno Vasconcelos, focusing on 3D reconstruction, 2D/3D detection, domain adaptation, & self-supervised learning

- Project leader & main developer of a novel drone flight system, recruiting 13 to collect a 120,000 image dataset
- Conducted experiments showing neural network vulnerabilities to pose & camera shake; improved by 32%
- Developed a novel neural network refinement algorithm to generate 3D meshes from a single image; used self-supervised learning & symmetry regularization, beating state-of-the-art (up to 47%), across many datasets

PUBLICATIONS

- Leung, Ho, & Vasconcelos. *Black-box test-time shape refinement for single view 3d reconstruction*. Published in [CVPRW 2022](#).
- Leung*, Ho*, Sandstrom, Chang, & Vasconcelos. (2019). *Catastrophic child's play: Easy to perform, hard to defend adversarial attacks*. Published in [CVPR 2019](#).
- Leung, Singh, & Horodniceanu. *Domain adaptation for real-world single view 3d reconstruction*. [ArXiv:2108.10972](#) 2020.

EDUCATION

University of California, San Diego (UCSD)

Sep 2015 – Apr 2022

- M.S. in Machine Learning & Data Science, GPA 3.86/4
- B.S. in Computer Science, GPA 3.88/4 (Magna Cum Laude, with highest distinction)

AWARDS AND ADDITIONAL EXPERIENCE

- Tesla Exceptional Performance Equity Grant, awarded to top 20% talent in Autopilot, Aug 2024
- NSF Graduate Research Fellowship (GRFP), Mar 2020
- Sloan Foundation Graduate Fellowship, Sep 2019
- NSF REU Research Grant, Sep 2018
- Conference Reviewer at ECCV 2020, ICCV 2021, CVPR 2021
- Teaching Assistant, UCSD Data Science Theory (DSC 40A/B) and Programming (CSE 8A), Jan 2018 – Jan 2019

TECHNICAL SKILLS

- **Expertise in:** Python, PyTorch, OpenCV, Numpy, Plotly, Bash, Slurm, Pytest, Sphinx, Jupyter Notebooks
- **Experience with:** Java, C/C++, HTML/CSS, JavaScript, AWS, Matlab, Amazon Turk